Swipe Match-on-Card Family Readers

Installation Manual

Models:

AY-B1663

AY-B4663

November 2009

ROSSLARE

SECURITY PRODUCTS

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1 Introduction

Mifare® Smart Card Fingerprint Swipe Sensor MOC (Match-On-Card technology, developed by Rosslare) Readers are biometric fingerprint readers that are used with access control systems. The Mifare® Smart Card Fingerprint Swipe Sensor MOC Reader Family includes the following readers:

- AY-B4663
- AY-B1663

Figure 1: AY-B1663 Snail Mifare® Smart Card and Fingerprint Swipe

Figure 3: AY-B4663 Rambo Mifare® Smart Card and Fingerprint Swipe

This Installation Manual contains the following information:

- Overview
- Technical Specifications
- Mounting Instructions
- Wiring Instructions
- Configuring the Reader
- Testing the Reader
- Modes of Operation

2 General Overview

Mifare® Smart Card Fingerprint Swipe Sensor MOC Readers use a Swipe type biometric sensor to check for 1:1 verification between fingerprint data and a biometric template stored in a Mifare® card. When verification is confirmed, the Reader then transmits the Card ID or any ID stored in sector 0 or 15 to the Access Controller, which compares the card ID to data stored in the database and decides access granting.

The Readers are compatible with most Access Control hardware, including the following hardware manufactured by Rosslare Security Products: AC-015, AC-115, AC-020, AC-215, AC-225, and AC-525.

2.1 Features

Mifare® Smart Card Fingerprint Swipe Sensor MOC Readers include the following features:

- 3 different designs to accommodate customer requirements and preferences
- 3 blue LEDs that flash in a pattern that leads users to swipe fingers in the correct direction
- Designed for indoor use (swipe sensor protection required for outdoor use)
- Support Back Tamper sensor and Tamper output signal
- Support Lockout feature for increased security
- Compatible with Mifare® (ISO 14443A) 1K and 4K cards
- Mifare® card followed by finger swipe reading
- Reads up to 2 fingerprint templates stored on the card
- Programmable data transmission formats
- Programmable LED control and buzzer control inputs
- Tamper output
- Compliant with the CE, UL, and FCC standards for international distribution

3 Technical Specifications

General Characteristics

Model Numbers	• AY-B4663 • AY-B1663
Output Formats	• Wiegand 26 (default) • Wiegand 26 with facility code • Wiegand 32 reversed • Clock & Data • Wiegand 32 • Wiegand 34 • Wiegand 40
Read Range (max)	4 cm (1.6 inches)

Electrical Characteristics

Power Supply Type	Linear type - recommended
Input Voltage	5 - 16VDC
Absolute Maximum (non-operating)	18VDC
Maximum Input Current	Standby: 85 mA @ 12VDC Read: 300 mA @ 12VDC
Tamper Output	Open collector, active low, max. sink current 32mA
Maximum Controller Cable Distance	150 m (500 ft) (using 18AWG shielded cable)
Frequency	13.56 MHz
Card Compatibility	Mifare® ISO14443A-3 standard

Environmental Characteristics

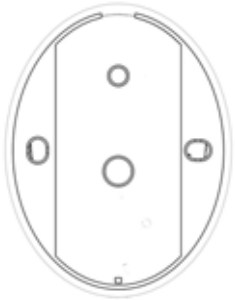
Operating Temp. Range	-25°C to 60°C -13°F to 140°F
Storage Temp. Range	-40°C to 85°C -40°F to 140°F
Operating Humidity	5% – 95% (non-condensing)

Dimensions

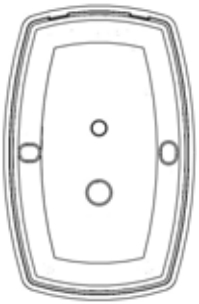
Reader	Height x Width x Depth	Weight
AY-B1663	85.4 x 50.6 x 27 mm 3.36 x 1.99 x 1.06 inch	65 g 2.3 oz.
AY-B4663	70.1 x 54.1 x 39.1 mm 2.76 x 2.13 x 1.54 inch	90 g 3.2 oz.

4 Mounting Instructions

Prior to starting, select the location where the controller unit is to be mounted. Use the supplied drilling template to assist in locating and drilling the appropriate holes.

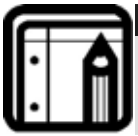


AY-B1663



AY-B4663

Figure 4: Mounting orientations



Note:

Be sure to protect the swipe sensor when the Reader is mounted outside.

To mount the Reader:

1. Determine an approximate surface location for the Reader.
2. Peel off the back of the self-adhesive mounting label template and place it on the required mounting location.
3. Using the template as a guide, drill two holes (of the size indicated on the template) on the surface to mount the Reader.
4. Insert a suitable wall plug into each hole.
5. Drill a 7/16" (10 mm) hole for the cable. If the surface is metal, place a grommet or electrical tape around the edge of the hole.
6. Unscrew and remove the case security screw at the bottom using the security hex key.

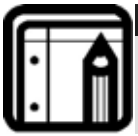
7. Carefully remove the snap-off front cover of the Reader to reveal two screw holes.

AY-B1663

AY-B4663

Figure 5: Removing the Top Cover

8. Route the interface cable from the Reader to the Controller.



Note:

The Reader can also be mounted using strong epoxy glue. After application, firmly hold the Reader in place until the glue dries.

9. Carefully re-attach the snap-off front cover of the Reader and secure the case security screw at the bottom using the security hex key.

5 Wiring Instructions

Mifare® Smart Card Fingerprint Swipe Sensor MOC Readers are supplied with a 7- wire, 18-inch cable.

To connect the Reader to the Controller:

1. Prepare the Reader cable by cutting the cable jacket back 1¼ inches, and by stripping the wires ½ an inch.
2. Prepare the Controller cable by cutting the cable jacket back 1¼ inches, and by stripping the wires ½ an inch.
3. Splice the Reader pigtail wires to the corresponding Controller wires (see Table 1), and cover each connection.
4. If the Tamper output is being utilized, connect the purple wire to the correct input on the Controller.
5. Trim and cover all conductors that are not used.

Table 1: Wiring the Reader to the Controller

Color	Wiring
Black/ Shield	Ground
Red	Vin
Green	Data 0
White	Data 1
Brown	LED control
Orange	Buzzer control
Purple	Tamper

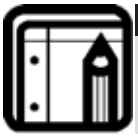
Note:

- The individual wires extending from the Reader are color-coded according to the required Wiegand standard.
- When using a separate power supply for the Reader, this supply and the Controller's power supply must have a common ground. A linear power supply is recommended.
- Attach the cable Shield wire on the Reader to an earth ground (best), or to a signal ground connection at the panel or power supply end of the cable. This configuration is best for shielding the Reader cable from external interference.

6 Configuring the Reader

To provide the highest level of security, the Reader is programmed to validate only Mifare® cards whose settings correspond to the Master card that is used to configure the Reader. The Master card controls the following settings:

- Card transfer format
- Mifare card Key A value
- LED and buzzer control enable
- Lock-out settings
- Transmission of Card Serial Number (CSN) or card ID from dedicated sector



Note:
The Master card is configured using the Desktop Programmer (CP-R25). Refer to the AS-B01 SW manual for more details.

6.1 Configuration Procedure

It is recommended to configure the Reader one time only, immediately following installation.

To configure the Reader:

1. Power up the Reader. The middle LED lights continuously for 8 seconds of boot loading. Then 3 long beeps are generated, and all 3 LEDs flash simultaneously for 3 seconds. The Reader is in Configuration mode.
2. Within 30 seconds (while the Reader is still in Configuration mode), present a valid Master card to the Reader. If the configuration was valid, 3 short beep will be emitted, and all 3 LEDs will flash 3 times at a fast rate, simultaneously. If the configuration was not valid, an error beep is generated. The Reader is configured to operate according to the settings of the presented Master card.

7 Testing the Reader

After wiring the Reader to the Controller and to a power supply, test the Reader.

To test the Reader:

1. Power up the Reader. 3 long beeps are generated, and all 3 LEDs flash simultaneously for 3 seconds. After 30 seconds, the LEDs illuminate alternately, from top to bottom.
2. Present the appropriate type of card to the Reader. If the card is valid and contains a fingerprint template, a short confirmation beep is generated, and all 3 LEDs will flash indicating successful read.
3. Following the confirmation, the LEDs will turn on and off in a fast circular mode, swipe your finger on the swipe sensor. If the fingerprint matches the template on the card, three short confirmation beeps are generated, and all 3 LEDs will flash indicating successful read. If there is a mismatch, a long, low beep is generated and the LEDs will turn off for 750mS.

8 Modes of Operation

Mifare® Smart Card Fingerprint Swipe Sensor MOC Readers have the following modes of operation:

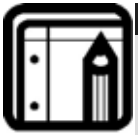
- Boot mode (Reset)
- Configuration Mode
- Standby mode
- Read mode
- Lockout mode

8.1 Boot Mode

The Reader enters Boot mode upon power up or upon restoration of power after a power failure where the loader runs separately from the main application. During Boot mode, which lasts for approximately four (4) seconds the middle LED is lit and firmware upgrades can be performed.

8.2 Configuration Mode

After the Boot mode ends the unit LEDs (all 3) will flash simultaneously 3 times for the duration of 3 seconds at a rate of: 600on-600off-600on-600off-600on (ms) indicating that the unit is in configuration mode. Configuration mode last for 30 seconds following the boot mode.



Note:

The Master card is configured using the Desktop Reader (CP-R25) and the Card programmer and Fingerprint enrollment. Refer to the AS-B01 SW manual for more details.

See Configuring the Reader, on page 11, for more on reader configuration

8.3 Standby Mode

The Reader enters Standby mode:

- After the Boot (reset) and configuration modes
- After the Lockout mode period

- After a successful card or fingerprint read

During Standby mode, the LEDs turn on and off in circular motion at a slow rate to indicate standby mode and the Reader is ready for normal use.

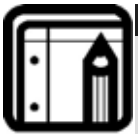
8.4 Read Mode

The Reader enters Read mode when a user presents a Mifare® card, followed by a swipe of the finger. The card and/or fingerprint can have a valid or invalid value and / or match.

8.4.1 Valid Card / Fingerprint Read

When card and fingerprint reads are valid, the following sequence occurs:

1. While the Reader is in Standby mode, a user presents a Mifare card to the Reader.
2. A short beep (50 milliseconds) is generated, and the LEDs will indicate a success flash, followed by all 3 LEDs flashing in a fast circular motion, indicating that the reader is waiting for the fingerprint swipe.
3. Swipe your fingerprint onto the fingerprint reader. When a match is found, short beep (50 milliseconds) is generated, and the LEDs will indicate a success flash.



Note:
If the user does not swipe their finger within 10 seconds, the Reader returns to Standby mode and the user must restart the identification procedure.

4. The data is transmitted to the Access Controller, according to the Reader's configured transmission format. The Reader then re-enters Standby mode.

8.4.2 Invalid Card / Fingerprint Read

An invalid card or fingerprint read can occur when:

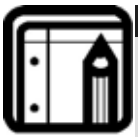
- The card is not verified.
- There is an error in fingerprint presentation (e.g., the user swipes too fast).

- There is a mismatch between the fingerprint and the template (e.g., the user presents the wrong finger).

When a card or fingerprint read is invalid, the following sequence occurs:

1. A user presents a Mifare® card to the Reader. This can occur during Standby mode (at the beginning of the identification procedure), or following a successful read of the first means of identification.
2. If the card or fingerprint is wrong the LEDs will turn on and the buzzer will emit a long, low, invalid indication beep (750mS) is generated. After this time period, the user can reattempt card or finger presentation.
3. If there are 5 invalid reads within 30 seconds, the Reader enters Lockout mode.

   If there are fewer than 5 invalid card / fingerprint reads within 30 seconds, the Reader enters Standby mode.



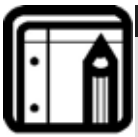
Note:

When connected and operating with Rosslare's controllers and the AxTrax software, the readers send specific messages when failures occur. Those messages appear and can be handled on the AxTrax software:

- Fingerprint data reading from card failed
- Swipe sensor Fingerprint reading failed
- Fingerprint swipe sensor / card verification failed

8.5 Lockout Mode

The Reader enters Lockout mode when there are number invalid card and / or finger reads within a 30 second period. During Lockout mode, all 3 LEDs flash simultaneously for 1 minute. After 1 minute, the Reader enters Standby mode.



Note:

5 is the default number of invalid reads before the Reader enters Lockout mode. The number of invalid reads can be programmed to be 1-10

1 minute is the default duration of Lockout mode. The duration can be programmed to be 1-5 minutes.

Appendix A Limited Warranty

ROSSLARE ENTERPRISES LIMITED S (Rosslare) TWO YEARS LIMITED WARRANTY is applicable worldwide. This warranty supersedes any other warranty. Rosslare's TWO YEARS LIMITED WARRANTY is subject to the following conditions:

Warranty

Warranty of Rosslare's products extends to the original purchaser (Customer) of the Rosslare product and is not transferable.

Products Covered By This Warranty and Duration

ROSSLARE ENTERPRISES LTD. AND / ORSUBSIDIARIES (ROSSLARE) warrants that the AY-B1663, AY-B3663, and AY-B4663 Mifare® Smart Card Fingerprint Swipe Sensor Readers are free from defects in materials and assembly in the course of normal use and service. The warranty period commences with the date of shipment to the original purchaser and extends for a period of 2 years (24 Months).

Warranty Remedy Coverage

In the event of a breach of warranty, ROSSLARE will credit Customer with the price of the Product paid by Customer, provided that the warranty claim is delivered to ROSSLARE by the Customer during the warranty period in accordance with the terms of this warranty. Unless otherwise requested by ROSSLARE ENTERPRISES LTD. AND / OR SUBSIDIARIES representative, return of the failed product(s) is not immediately required.

If ROSSLARE has not contacted the Customer within a sixty (60) day holding period following the delivery of the warranty claim, Customer will not be required to return the failed product(s). All returned Product(s), as may be requested at ROSSLARE ENTERPRISES LTD. AND /OR SUBSIDIARY'S sole discretion, shall become the property of ROSSLARE ENTERPRISES LTD. AND /OR SUBSIDIARIES.

To exercise the warranty, the user must contact Rosslare Enterprises Ltd. to obtain an RMA number after which, the product must be returned to the Manufacturer freight prepaid and insured

In the event ROSSLARE chooses to perform a product evaluation within the sixty (60) day holding period and no defect is found, a minimum US$ 50.00 or equivalent charge will be applied to each Product for labor required in the evaluation.

Rosslare will repair or replace, at its discretion, any product that under normal conditions of use and service proves to be defective in material or workmanship. No charge will be applied for labor or parts with respect to defects covered by this warranty, provided that the work is done by Rosslare or a Rosslare authorized service center.

Exclusions and Limitations

ROSSLARE shall not be responsible or liable for any damage or loss resulting from the operation or performance of any Product or any systems in which a Product is incorporated. This warranty shall not extend to any ancillary equipment not furnished by ROSSLARE, which is attached to or used in conjunction with a Product, or to any Product that is used with any ancillary equipment, which is not furnished by ROSSLARE.

This warranty does not cover expenses incurred in the transportation, freight cost to the repair center, removal or reinstallation of the product, whether or not proven defective.

Specifically excluded from this warranty are any failures resulting from Customer's improper testing, operation, installation, or damage resulting from use of the Product in other than its normal and customary manner, or any maintenance, modification, alteration, or adjustment or any type of abuse, neglect, accident, misuse, improper operation, normal wear, defects or damage due to lightning or other electrical discharge. This warranty does not cover repair or replacement where normal use has exhausted the life of a part or instrument, or any modification or abuse of, or tampering with, the Product if Product disassembled or repaired in such a manner as to adversely affect performance or prevent adequate inspection and testing to verify any warranty claim.

ROSSLARE does not warrant the installation, maintenance, or service of the Product. Service life of the product is dependent upon the care it receives and the conditions under which it has to operate.

In no event shall Rosslare be liable for incidental or consequential damages.

Limited Warranty Terms

THIS WARRANTY SETS FORTH THE FULL EXTENT OF ROSSLARE ENTERPRISES LTD. AND ITS SUBSIDIARIES' WARRANTY

THE TERMS OF THIS WARRANTY MAY NOT BE VARIED BY ANY PERSON, WHETHER OR NOT PURPORTING TO REPRESENT OR ACT ON BEHALF OF ROSSLARE.

THIS LIMITED WARRANTY IS PROVIDED IN LIEU OF ALL OTHER WARRANTIES. ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE SPECIFICALLY EXCLUDED.

IN NO EVENT SHALL ROSSLARE BE LIABLE FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, OR FOR ANY OTHER INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF USE, LOSS OF TIME, COMMERCIAL LOSS, INCONVENIENCE, AND LOSS OF PROFITS, ARISING OUT OF THE INSTALLATION, USE, OR INABILITY TO USE SUCH PRODUCT, TO THE FULLEST EXTENT THAT ANY SUCH LOSS OR DAMAGE MAY BE DISCLAIMED BY LAW.

THIS WARRANTY SHALL BECOME NULL AND VOID IN THE EVENT OF A VIOLATION OF THE PROVISIONS OF THIS LIMITED WARRANTY.

Appendix B Technical Support

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